

## Figure 1

	<u>Gene symbol</u>	<u>Gene name</u>
5	OSBP	Oxysterol-binding protein
	NFKB3 (p65)	nuclear factor of kappa light polypeptide gene enhancer B-cells 3
10	CAPN1	Calpain, large polypeptide L1
	CCND1	Cyclin D1
15	EFEMP2*	EGF-containing fibulin-like extracellular matrix protein 2
	FOSL1	FOS-like antigen-1
20	PLCB3	Phospholipase C, beta 3 (phosphatidylinositol-specific)
	PPP1CA	Protein phosphatase-1, catalytic subunit, alpha isoform
	VEGFB	Vascular endothelial growth factor B
25	ESRRA, ERR1	estrogen-related receptor alpha
	CTSW	Cathepsin W
30	GALN*	Galanin
	LRP5, LRP7, LR3*	Low density lipoprotein receptor-related protein-5
	CBP2	Collagen-binding protein 2 (collagen 2)
35	TCIRG1	T-cell immune regulator 1
	LTBP3	Latent transforming growth factor-beta binding protein-3
40	FGF19*	Fibroblast growth factor 19 (FGF19)
	Delta5-desaturase*	Delta5-desaturase

Figure 2

5           GCCATGGAGCCCGAGTGAGCGCGGCGGGCCCCGTCCGGCCGCCGGACAAACAT  
GGAGGCAGCGCCGCCGGGGCCCGTGGCGCTGCTGCTGCTGCTGCTGCT  
10          GCTGGCGCTGTGCGGCTGCCC GGCCCCCGCCGCGGCCCTGCCGCTCTGCTATT  
GCCAACCGCCGGGACGTACGGCTGGTGGACGCCGGCGAGTCAGCTGGAGTC  
CACCATCGTGGTCAGCGGCCTGGAGGATGCCGGCAGTGGACTTCCAGTTTC  
CAAGGGAGCCGTGTACTGGACAGACGTGAGCGAGGAGGCCATCAAGCAGACCT  
ACCTGAACCAGACGGGGCCGGTGCAGAACGTGGTCATCTCCGGCTGGTCT  
15          CTCCCGACGGCCTCGCCTGCGACTGGGTGGCAAGAACGCTGTACTGGACGGACT  
CAGAGACCAACCGCATCGAGGTGGCAACCTCAATGGCACATCCCGAAGGTGC  
TCTTCTGGCAGGACCTTGACCAGCCTAGGGCATCGCCTTGGACCCCGCTCACG  
GGTACATGTACTGGACAGACTGGGTGAGACGCCGGATTGAGCGGGCAGGG  
ATGGATGGCAGCACCCGAAGATCATTGTGGACTCGGACATTTACTGGCCAAT  
20          GGACTGACCATCGACCTGGAGGAGCAGAACGCTACTGGGCTGACGCCAAGCTC  
AGCTTCATCCACCGTGCCAACCTGGACGGCTCGTCCGGAGAACGGTGGTGGAG  
GGCAGCCTGACGCACCCCTCGCCCTGACGCTCTCCGGGGACACTCTGTACTGG  
ACAGACTGGCAGACCCGCTCCATCCATGCCCTGCAACAAGCGCACTGGGGGAAG  
AGGAAGGGAGATCCTGAGTGCCCCTACTCACCCATGGACATCCAGGTGCTGAGC  
25          CAGGAGCGGCAGCCTTCTCCACACTGGCCTGAGGAGGACAATGGCGGCTGC  
TCCCACCTGTGCCCTGCTGTCCCCAAGCGAGCCTTCTACACATGCCCTGCCCA  
CGGGTGTGCAGCTGCAGGACAACGGCAGGACGTGAAGGGAGGAGCCGAGGAG  
GTGCTGCTGCTGGCCCGGACGGACCTACGGAGGATCTGGCTGGACACGCCG  
GACTTCACCGACATCGTGCCTGAGGAGGACACAACGGCACGCCATGCCATC  
30          GAECTACGACCCGCTAGAGGGCTATGTCTACTGGACAGATGACGAGGIGGGGCC  
ATCCGCAGGGCGTACCTGGACGGGTCTGGGCOACAGACGCTGGTCAACACCGAG  
ATCAACGACCCCGATGGCATCGCGGCTGACTGGGCTAACCGCACCTCCCG  
ACCGACACGGGCACGGACCGCATCGAGGTGACCGCCCTAACGGCACCTCCCG  
AAGATCCTGGTGTGGAGGACCTGGACGAGCCCCGAGCCAACGGCACCTCCCG  
35          GTGATGGGCTCATGTACTGGACAGACTGGGAGAGAACCTAAATGAGTGT  
GCCAACTTGGATGGCAGGAGGGCGTGTGCTGGCAACGGGAGACGCC  
CCCAACGGCCTGGCCCTGGACCTGCAGGAGGGAAACCTACIGGGAGACGCC  
AAGACAGACAAGATCGAGGTGATCAATGTTGATGGGACGAAGAGGGGGACCT  
CCTGGAGGACAAGCTCCCGACATTTGGGTTACGCTGCTGGGACTTCA  
40          CTACTGGACTGACTGGCAGCGCCCGAGCATCGAGCGGGTGCACAAGGTCAAGGC  
CAGCCGGACGTACATTGACCAAGCTGCCGACCTGATGGGCTAACAGCTGT  
GAATGTGGCCAAGGTCGTCGGAACCAACCGTGTGCGGACAGGAACGGGGGT  
GCAGCCACCTGTGCTTCTCACACCCACGCAACCCGGTGTGGCTGCCCATCG  
GCCTGGAGCTGCTGAGTACATGAAGACCTGCATCGCCTGAGGCCTTCTGG  
45          TCTTCAACCAGCAGAGCCGACATCCACAGGATCTCCCTCGAGACCAATAACACG  
ACGTGGCCATCCCGCTCACGGGCGTCAAGGAGGGCTCAGCCCTGGACTTTGATG  
TGTCCAACAACCAACCATCTACTGGACAGACGTGAGCCTGAAGACCATCAGCCGCG  
CCTTCATGAACGGGAGCTCGGTGGAGCACGTGGTGGAGTTGGCCTGACTACC  
CCGAGGGCATGCCGTTGACTGGATGGCAAGAACCTCTACTGGGCCACACTG  
GGACCAACAGAACGAACTGAAGTGGCCCGCIGGACGGGAGTCCGGCAAGTCCTC  
GTGTGGAGGGACTTGGACAACCCGAGGTGCGCTGGCCCTGGATCCACCAAGGGC  
TACATCTACTGGACCGAGTGGGGCGCAAGCCGAGGATCGTGCAGGCCATCG

Figure 2 (Page 2 of 3)

GACGGGACCAACTGCATGACGCTGGTGGACAAGGTGGGCCGGCCAACGACCT  
CACCATTGACTACGCTGACCAGCGCCTACTGGACCGACCTGGACACCAACAT  
GATCGAGTCGTCACATGCTGGTCAGGAGCGGGCTGTGATTGCCGACGATCT  
CCCGCACCGTTCGGTCTGACCGAGTACAGCGATTATATCTACTGGACAGACTG  
5 GAATCTGCACAGCATTGAGCGGGCCACAAGACTAGCGGCCGAACCGCACCCCT  
CATCCAGGGCCACCTGGACTTCGTGATGGACATCCTGGTGTCCACTCCTCCC  
CAGGATGGCCTCAATGACTGTATGCACAACAACGGGAGTGTGGCAGCTGTGC  
CTTGGCACTCCCCGGGCCACCGCTGGCCTGCACACTACACCCCTGGAC  
10 CCCAGCAGCCCACTGCAGCCCCACCACCTTCTGCTGTTAGCCAGAAA  
TCTGCCATCAGTCGGATGATCCCGGACGACCAGCACAGCCGGATCTCATCTG  
CCCCTGCATGGACTGAGGAACGTCAAAGCCATCGACTATGACCCACTGGACAAG  
TTCATCTACTGGGTGGATGGCGCCAGAACATCAAGCGAGCCAAGGACAGCG  
GACCCAGCCCTTGTTGACCTCTGAGCCAAGGCCAAACCCAGACAGGCA  
GCCACGACCTCAGCAGCATCTACAGCCGGACACTGTTCTGGACGTGCGA  
15 GGCCACCAATACCATAACGTCACAGGCTGAGCGGGGAGCCATGGGGTGG  
TGCTCGTGGGGACCGCGACAAGCCAGGGCATCGTCGCAACCGGGAGCGA  
GGGTACCTGTACTTCACCAACATGCAGGACCGGGCAGCCAAGATCGAACCG  
GCCCTGGACGGCACCAGCGAGGTCTCTACCACCGGCTCATCCGCC  
GTGGCCCTGGTGGGACAACACACTGGCAAGCTGTTCTGGGTGGACGG  
20 CTGAAGCGATTGAGAGCTGTGACCTGTCAGGGCCAACCGGCTGACCGCTGGAG  
GACGCCAACATCGTGCAGCCTCTGGCCTGACCATCCTGGCAAGCATCTAC  
TGGATCGACGCCAGCAGCAGATGATCGAGCGTGTGGAGAACGACCCGGGA  
CAAGCGGACTCGCATCCAGGGCGTGTGCCCACCTCACTGGCATCCATGCAGT  
GGAGGAAGTCAGCCTGGAGGAAGTCTCAGCCCACCCATGTGCCCCGTGACAATGG  
25 TGGCTGCTCCACATCTGATTGCCAAGGGTGTGGGACACCACGGTGCTCATG  
CCCAGTCCACCTCGTGTCTGCAGAACCTGCTGACCTGTTGGAGAGGCC  
CTGCTCCCCGGACCAGTTGATGTGCCACAGGGGAGATGACTGTATCCCCGG  
GGCCTGGCGCTGTGACGGCTTCCGAGTGCATGACAGAGCGACGAGGAGGG  
CTGCCCGTGTGCTCCGCCAGTCCCTGCGCGCGGGTCACTGTGTGGA  
30 CCTGCGCCTGCGCTGCGACGGCGAGGCAGACTGTCAGGACCGCTCAGACGAGGC  
GGACTGTGACGCCATCTGCCTGCCAACCAAGCTTCCGGTGTGCGAGCGGCCAGTG  
TGTCTCATCAAACAGCAGTGCAGCTCTCCCGACTGTATCGACGGCTCCGA  
CGAGCTCATGTGTGAAATACCCAAGCCGCTCAGACGACAGCCGGCCACAG  
CAGTGCATCGGGCCCGTCACTGGCATCATCTCTCTCGTCATGGGTGGT  
35 GTCTATTTGTGTGCCAGCGCTGGTGTGCCAGCGCTATGCCGGGCAACGGG  
CCCTCCCGCACGAGTATGTCAGCGGGACCCCGACGTGCCCCCTCAATTCTATA  
GCCCGGGCGGTCCAGCATGGCCCTTCACAGGCATCGCATGCCAAAGTCC  
ATGATGAGCTCCGTGAGCCTGATGGGGGCCGGGGGGTGCCTGTACGAC  
CGGAACCACGTACAGGGGCCCTGTCAGCAGCTCGTCCAGCAGCACGAAGGCCACG  
40 CTGTACCCGCCGATCTGAACCCGCCCTCCCCGGCACGGACCCCTCCCTG  
TACAACATGGACATGTTACTCTTCAAACATTCCGGCCACTGCGAGACCGTAC  
AGGCCCTACATCATTGAGGAATGGCGCCCCCGACGACGCCCTGCGACACCGAC  
GTGTGTGACAGCGACTACAGCGCCAGCCGTGAAAGGCCAGCAAGTACTACCTG  
GATTGAACTCGGACTCAGACCCCTATCCACCCCCACCCACGCCACAGCCAG  
45 TACCTGTCGGGGAGGACAGCTGCCGCCCTGCCGCCACCGAGAGGGAGCTAC  
TTCCATCTCTCCGCCCTCCGTCCCC  
CTGCACGGACTCATCCTGACCTCGGCCGGCCACTCTGGCTTCTGTGCCCTG  
TAAATAGTTAAATATGAACAAAGAAAAAATATTTATGATTAAAAAAT

Matthew L. WARMAN et al.  
"REGULATOR GENE AND SYSTEM  
USEFUL FOR THE DIAGNOSIS AND  
THERAPY OF OSTEOPOROSIS  
Serial No. 09/931,375

Figure 2 (Page 3 of 3)

AAATATAATTGGGATTTAAAAACATGAGAAATGTGAACGTGATGGGGTGGC  
AGGGCTGGGAGAACCTTGTA

D09694 T09695 S09696 D09697 T09698 S09699 D09690

Figure 3

MEAPPGPPWPLLLLLLALCGCPAPAAASPLLLFANRRDVRLVDAGGVKLESTI  
VVGLEDAAA VDFQFSKGAVYWTDVSEEAIKQTLYLNQTGA AVQNVVISGLVSPDGL  
5 ACDWVGKKLYWTDSETNRIEVANLNGTSRKVLFWQDLDQPRAI ALDPAHGYMYW  
TDWGETPRIERA GMGDSTRKIVDSDIYWPNGLTIDLEE QKLYWADAKLSFIHRANL  
DGSFRQKVVEGSLTHPFALTSGDTLYWTDWQTRSIHACNKRTGGKRKEILSALYSP  
MDIQVLSQERQPFFHTRCEEDNGGCSHLCLLSPSEPFTCACPTGVQLQDNGRTCKA  
GAEEVLLARRTDLRISLDTPDFTDIVLVQDDIRHALAIDYDPLEGYVYWTDDEVR  
10 AIRRAYLDGSGAQTLVNTEINDPDGIAVDWVARNLYWTDGTDRIVETRLNGTSRK  
ILVSEDLDEPRAIALHPVMGLMYWTDWGENPKIECANLDGQERRVVLVNASLGWPN  
GLALDLQEGKLYWGDAKTDKIEVINVDGTRRTILEDKLPHIFGFTLLGDFIYWT  
WQRRIERVHKVKASRDVIIDQLPDLMGLKAVNVAKVVGTNPCADRNGGCSHLCFF  
TPHATRCGCPIGLELLSDMKTCVPEAFLVFTSRAJHRISLETNNNDVAIPLTVKE  
15 ASALDFDVSNNHIYWTDVSLKTISRAFMNGSSVEHVVEFGLDYPEGMAVDWMGKN  
LYWADTGTNRIEVARLDGQFRQVLVWRDLDNPRSLALDPTKGTYWTEWGGKPRI  
VRAFMDGTNCMTLVDKVGRANDLTIDYADQRLYWTDLDTNMIESSNMLGQERVV  
IADDLPHFGLTQYSYIYWTDWNLHSIERADKTSGRNRTLIQGHLDVFMDILVFHS  
SRQDGLNDCMHNNGQCGQLCLAIPGGHRCGCASHYTLDPSSRNCSPPTTFLFSQKS  
20 AISRMIPDDQHSPDLILPLHGLRNVKAIDYDPLDKFIYWVDGRQNIKRAKDDGTQPF  
VLTSLSQGQNPDRQPHDLSIDIYSRTLFWTCEATNTINVHRLSGEAMGVVRGDRDK  
PRAIVVNAERGYLYFTNMQDRAAKIERAALDGTEREVLFTTGLIRPVALVVDNTLG  
KLFWVDADLKRIESCDLSGANRLTEDANIVQPLGLTILGHLYWIDRQQQMIERVE  
KTTGDKRTRIQRGRAHLTGIHAVEEVSLLEEFSAHPCARDNGGCSHICIAKGDGTPRC  
25 SCPVHLVLLQNLTCGEPPTCSPDQFACATGEIDCIPGAWRCDGFPECDDQSDEEGC  
PVCSAAQFPCARGQCVDLRLRCDGEADCQDRSDEADCDAICLPNQFRCASGQCVL  
KQQCDSFPDCIDGSDELMCEITKPPSDDSPAHS SAI GPVIGIILSFV MGGVYFVCQRV  
VCQRYAGANGPFPHEYVSGTPHVPLNFIAPGGSQHGPFTGIACGKSM MSSVSLMG  
RGGVPLYDRNHVTGASSSSSSTKATLYPPILNPPPSPATDPSLYNMDMFYSSNIPAT  
30 ARPYRPYIIRGMAPPTPCSTDVCDSDYSASRWKASKYYLDLNSDSDPYPPPPTPHSQ  
YLSAEDSCPPSPATERSYFHLFPPPPSPCTDSS

**Figure 4**

Source	Nucleotide change	Protein change	Putative effect
OPS 88	G29A	Trp10stop	Truncation
Control	A459G	Pro153Pro	No change
Control	InsCTG33	Insert Leu at residue 12	Alters signal peptide
OPS 78	GACCTACG 1051-1058 ACCCTACA	AspLeuSer 351-353 ThrLeuLys	Unknown
OPS 59	C1282T	Arg428stop	Truncation
OPS 53	G1253T	Glu485stop	Truncation
OPS 23	delG1467	Frameshift	Truncation
OPS 82	G1481A	Arg494Gln	Unknown
OPS 2	C1708T	Arg570Trp	Unknown
OPS 72	G1999A	Val677Met	Unknown
OPS 45	insT2150	Frameshift	Truncation
OPS 41	G2202A	Trp734stop	Unknown
Control	C2220T	Asn740Asn	Unknown
OPS 92	delG2305	Frameshift	Truncation
OPS13	C2557T	Gln853stop	Truncation
OPS 7	delA3804	Frameshift	Truncation
OPS 53	C3989T	Ala1330Leu	Unknown
OPS 72	C3989T	Ala1330Leu	Unknown
Control	G4416T	Leu1472Leu	No change

Figure 5

NAME	SEQUENCE	LOCATION	PRODUCT SIZE
LRGEN1F	5'-TTG CTG CCC TAG ACT TAG CC-3'	-119	406
LRGEN1R	5'-CCA AGT CGC TTC CGA GAC-3'	+106	
LRGEN2F	5'-CAT CCC AGG GCT GTG TAT CT-3'	-65	543
LRGEN2R	5'-ACT TGG GCT CAT GCA AAT TC-3'	+81	
LRGEN3F1	5'-CCG ATG GGT GAG ATT TTA GG-3'	-118	329
LRGEN3R1	5'-CGT GGG TAC CTA CCG GAA C-3'	+16	
LRGEN4NF	5'-TAA TTG GGT CAG CAG CAA TG-3'	-72	277
LRGEN4NR	5'-GCA CTC ACA GAA AGG CTG-3'	+8	
LRGEN5NF	5'-AGT GAC GGT CCT CTT CTG GA-3'	-51	302
LRGEN5NR	5'-CAA GTG GAT CAT TTC GAA CG-3'	+120	
LRGEN6F	5'-TGG CTG AGT ATT TCC CTT GC-3'	-95	577
LRGEN6R	5'-CCA GAA TGA CAG GTC CAG GT-3'	+85	
LRGEN7F1	5'-TGC TTC TTC TCC AGC CTC AT-3'	-14	302
LRGEN7R1	5'-ATG TGG CCA AAT AGC AGA GC-3'	+116	
LRGEN8F	5'-GCA TTG AAC CCG TCT TGT TT-3'	-109	426
LRGEN8R	5'-GGC ACC TGA GCT CAA CAC TT-3'	+100	
LRGEN9F	5'-TGC TGG GCT GTT GT GTT TA-3'	-47	407
LRGEN9R	5'-CTT TGA GGC AGG AAC AGA GG-3'	+70	
LRGEN10F	5'-AGC GAA ACT CCG TCT CAA AA-3'	-79	417
LRGEN10R	5'-GCT CTA ATC ACT GAG GGC CA-3'	+110	
LRGEN11F1	5'-GAG GGC TGA GCT GAA GAG GT-3'	-105	398
LRGEN11R1	5'-CAG GTT GGG GAA CTT GCA G-3'	+108	
LRGEN12F	5'-ATT CAT GTG GTC GCT AGG CT-3'	-113	479
LRGEN12R	5'-GAA GCT CCT TTC AGC GTC AG-3'	+40	
LRGEN13F	5'-CCA GCT CCT CTG TGG CTT AC-3'	-57	352
LRGEN13R	5'-TCC TCC CTC TGC TAA GGA CA-3'	+95	
LRGEN14F	5'-CAG AGC TCT CCA GCC AGT G-3'	-149	440
LRGEN14R	5'-CTG TGA GAG GCT GGC ATT C-3'	+82	
LRGEN15NF	5'-ATG TGA CCT GTC AGC CTC G-3'	-131	415
LRGEN15NR	5'-TGC TGC CAT TAC TGA CAA TGA-3'	+83	
LRGEN16F	5'-TCT GTC CTC CCA AGC TGA GT-3'	-76	374
LRGEN16R	5'-CAC ACA GGA TCT TGC ACT GG-3'	+88	
LRGEN17F	5'-CAT GAG TTC TCA TTT GGC CC-3'	-92	321
LRGEN17R	5'-GCC ACA GGG ACT GTG ATT TT-3'	+103	
LRGEN18F	5'-CAA CTT CTG CTT TGA AGC CC-3'	-88	423
LRGEN18R	5'-CAG AGC CCC TAC TCC TGT GA-3'	+98	
LRGEN19F	5'-CCA GAC CTT GGT TGC TGT G-3'	-81	269
LRGEN19R	5'-CGT CTC CTC CCC TAA ACT CC-3'	+77	
LRGEN20NF	5'-ATG TTG GCC ACC TCT TTC TG-3'	-34	310
LRGEN20NR	5'-CTG CCT CCT CCA GAT CAT TC-3'	+39	
LRGEN21F	5'-GAG TCT CGT GGG TAG TGG GA-3'	-102	373

0 9 8 7 6 5 4 3 2 1 0

Matthew L. WARMAN et al.  
 "REGULATOR GENE AND SYSTEM  
 USEFUL FOR THE DIAGNOSIS AND  
 THERAPY OF OSTEOPOROSIS  
 Serial No. 09/931,375

Figure 5 (Page 2 of 2)

LRGEN21R	5'AGA AAG CAA GCA TGC CTC AG-3'	+131	
LRGEN22F	5'-AGC CCT CTC TGC AAG GAA AG-3'	-96	305
LRGEN22R	5'-GCC CAC TAG CAC CCA GAA TA-3'	+111	
LRGEN23F	5'-GAC AGG CCT TTC CCG TTC-3'	-95	650
LRGEN23R	5'-CAG GAG GAC TCT CAT GGT GG-3'	+106	
LRCOD1F	5'-TTC GTC ATG GGT GGT GTC TA-3'	4192	416
LRCOD1R	5'-TTC CTC GAA TGA TGT AGG GC-3'	4607	
LRCOD2F	5'-ACC TGG ACT TCG TGA TGG AC-3'	2654	466
LRCOD2R	5'-CAG AAC AGT GTC CGG CTG TA-3'	3119	
LRCOD3F	5'-CCA TGG AGC CCG AGT GAG-3'	-50	504
LRCOD3R	5'-GTC AAG GTC CTG CCA GAA GA-3'	453	
LRCOD4F	5'-GGG CAA GAA GCT GTA CTG GA-3'	354	500
LRCOD4R	5'-TGG ATG TCC ATG GGT GAG TA-3'	853	
LRCOD5F	5'-CAG ACC CGC TCC ATC CAT-3'	767	484
LRCOD5R	5'-TCG TTG ATC TCG GTG TTG AC-3'	1250	
LRCOD6F	5'-ATC GAC TAC GAC CCG CTA GA-3'	1132	546
LRCOD6R	5'-GTA GAT GAA GTC CCC CAG CA-3'	1677	
LRCOD7F	5'-GCC AAG ACA GAC AAG ATC GAG-3'	1564	505
LRCOD7R	5'-TGT GGT TGT TGG ACA CAT CA-3'	2068	
LRCOD8F	5'-CAC AGG ATC TCC CTC GAG AC-3'	1966	522
LRCOD8R	5'-CTC GAT CAT GTT GGT GTC CA-3'	2487	
LRCOD9F	5'-CAG CCC TTT GTT TTG ACC TC-3'	3025	484
LRCOD9R	5'-TCC AGT AGA GAT GCT TGC CA-3'	3508	
LRCOD10F	5'-AAG CGC ATT GAG AGC TGT G-3'	3400	480
LRCOD10R	5'-CTC CTC GTC GCT CTG GTC-3'	3879	
LRCOD11F	5'-CAC AGG GGA GAT CGA CTG TAT-3'	3801	480
LRCOD11R	5'-ACA TAC TCG TGC GGG AAG G-3'	4280	
LRCOD12F	5'-GTC CAG CAG CTC GTC CAG-3'	4446	567
LRCOD12R	5'-TAC AAA GTT CTC CCA GCC CT-3'	5012	
LRCOD13F	5'-TCA TGG ACG GGA CCA ACT-3'	2369	431
LRCOD13R	5'-GGT GTA GTG TGA GGC GCA G-3'	2799	

## Figure 6

### BMSR Construct Information

5 The following BMSR expression constructs have been constructed using the pcDNA3 expression vector for use in following BMSR expression, function, and other biological (e.g. ligand and downstream signaling) interactions.

10 1. A full length wild type construct extending from primers LRCOD3F to LRCOD12R.

Sequence encoding a FLAG antibody epitope (GAC TAC AAG GAC GAC GAT GAC AAG) was inserted into the wild-type construct immediately downstream of nucleotide 165 (relative to the "A" in the ATG translation start site). This construct expresses a BMSR protein which has a FLAG epitope between wild type BMSR amino acid residues 55 and 56.

This was accomplished using the following primer sequences and a Quickchange reaction:

20 LRPFLAGF: 5'-GAC TAC AAG GAC GAC GAT GAC AAG ACC ATC GTG GTC AGC GGC CTG-3'

25 LRPFLAGR: 5'-CTT GTC ATC GTC GTC CTT GTA GGA CTC CAG CTT GAC TCC GCC-3'

30 Sequence encoding a MYC antibody epitope (GAG CAG AAG CTG ATA TCC GAG GAG GAC CTG) was inserted immediately upstream of the stop codon after residue 4845 (relative to the "A" in the ATG translation start site). The construct expresses a BMSR protein which has a MYC epitope at the end of the wild type BMSR polypeptide.

35 This was accomplished using the following primer sequences and a Quickchange reaction:

LRPMYCF: 5'-GAG CAG AAG CTG ATA TCC GAG GAG GAC CTG TGA CCT CGG CCG GGC-3'

35 LRPMYCR: 5'-CAG GTC CTC CTC GGA TAT CAG CTT CTG CTC GGA TGA GTC CGT GCA-3'

40 A expression construct containing both the FLAG and MYC antibody epitopes at the aforementioned sites has also been produced.

Figure 7

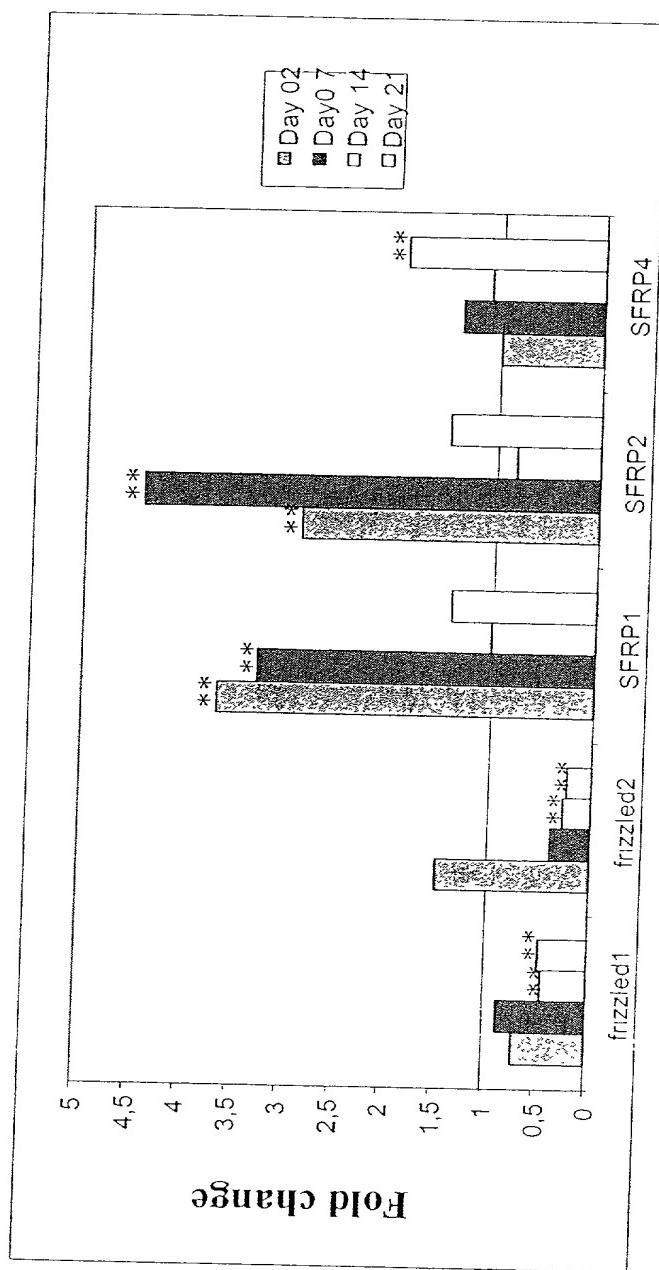


Figure 8

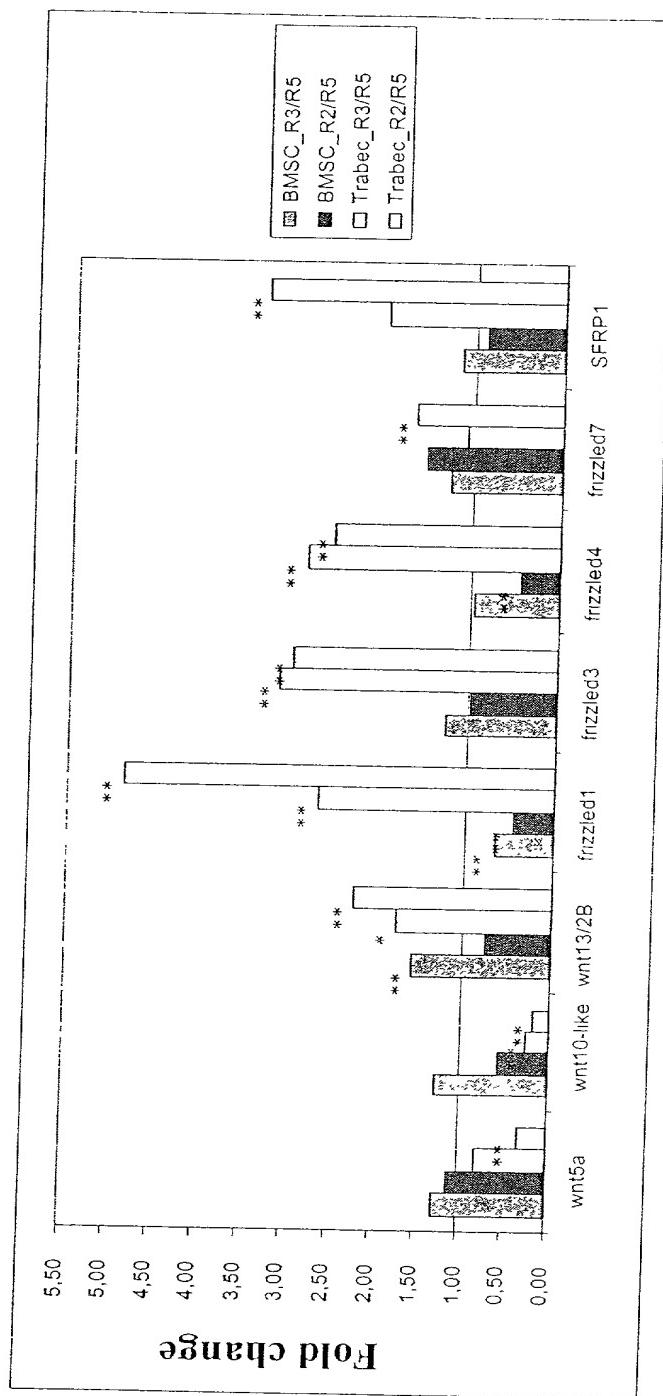


Figure 9

Cell line/treatment Gene name	C2C12/BMP2 (4 days)	C3H10T1/2/BMP2-SHH (4 days)	SD/BMP2 (4 days)	MC3T3-E (3 days)
Frizzled1	2.25x	NR	2.62x	2.11x
Frizzled4	NR	4.37x	NR	NR
SFRP2/SARPI	8.10x	0.5x (0.4x with SHH alone)	8.54x	3.61x (0.09 with TGFbeta)

Figure 10

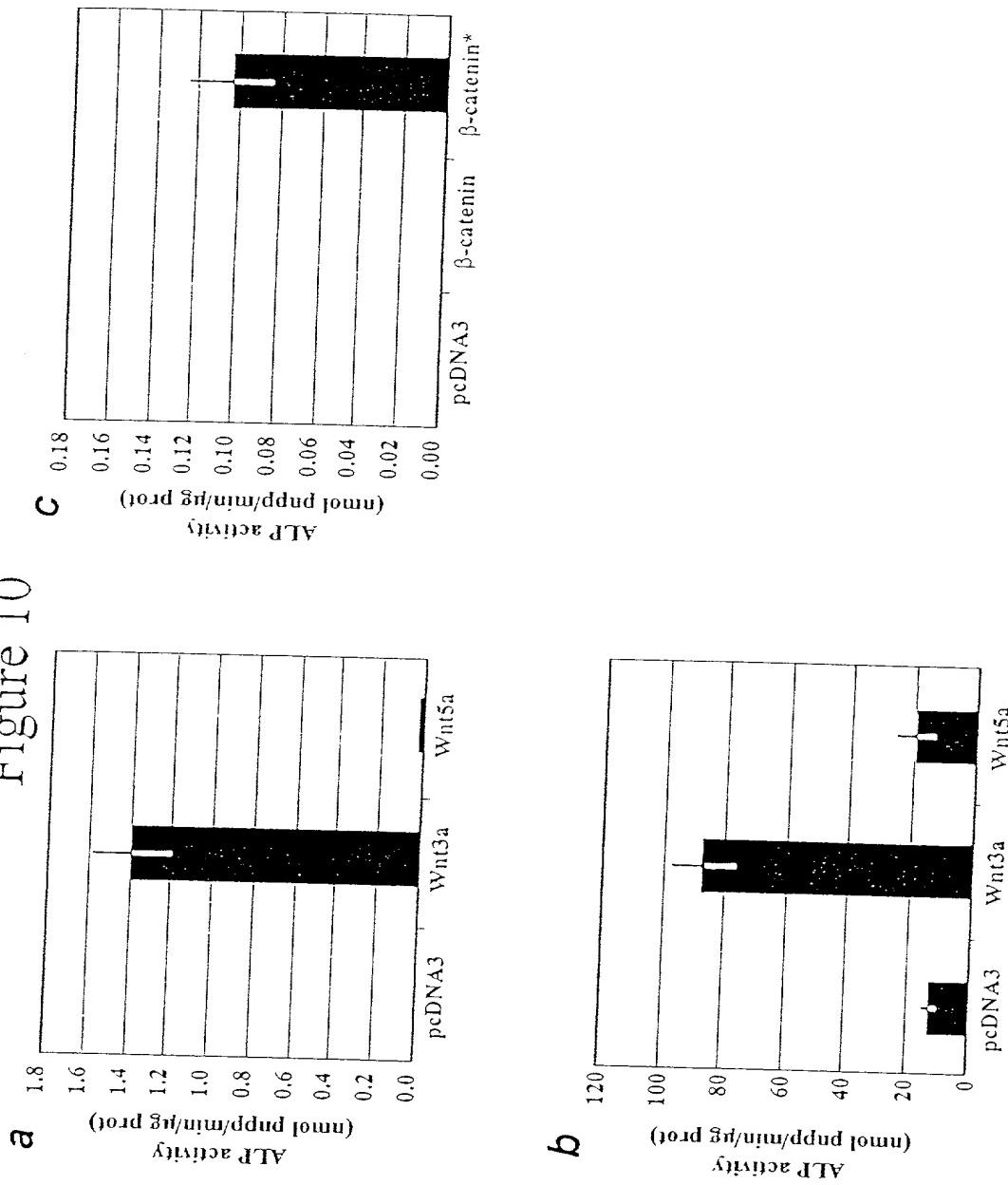


Figure 11

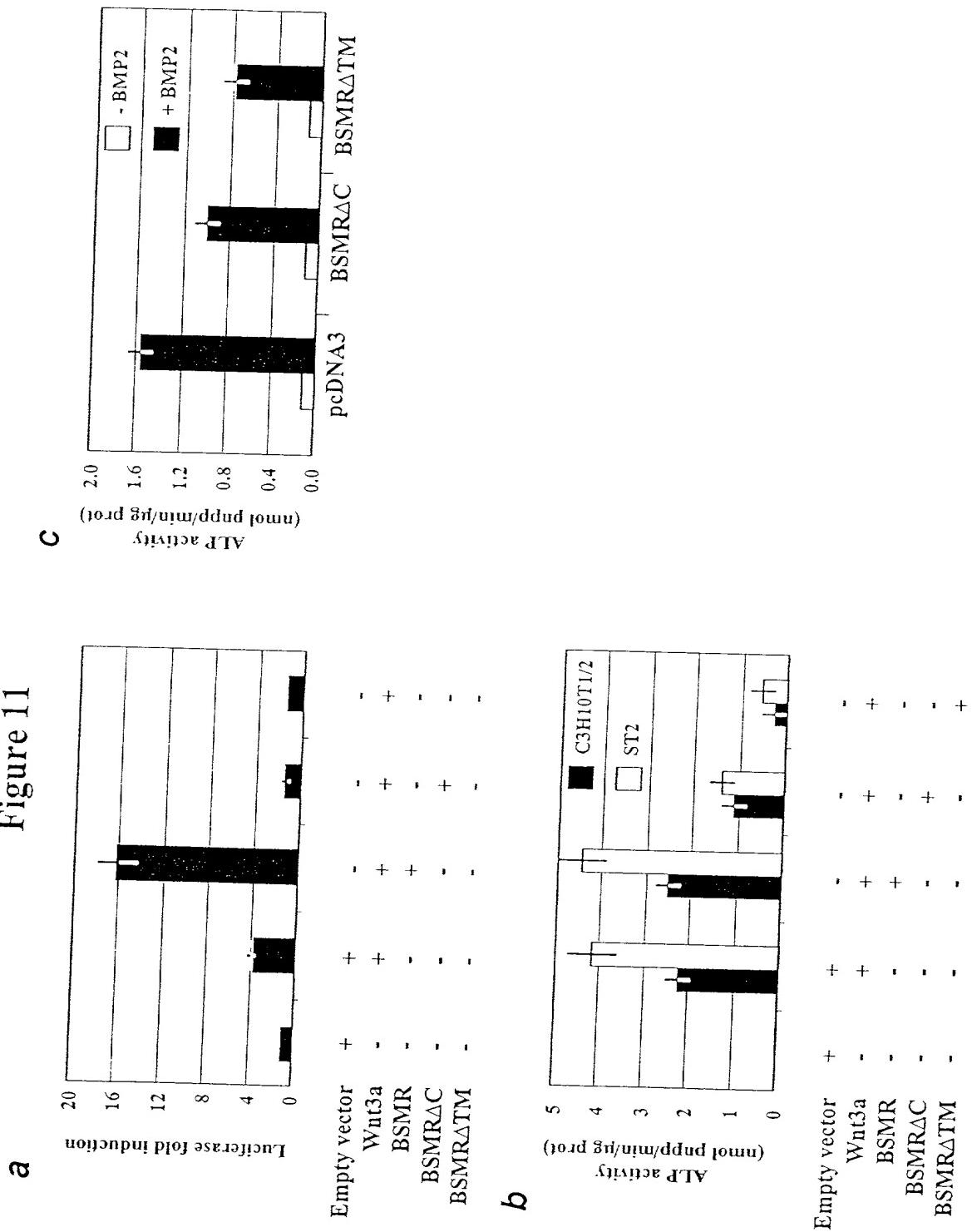
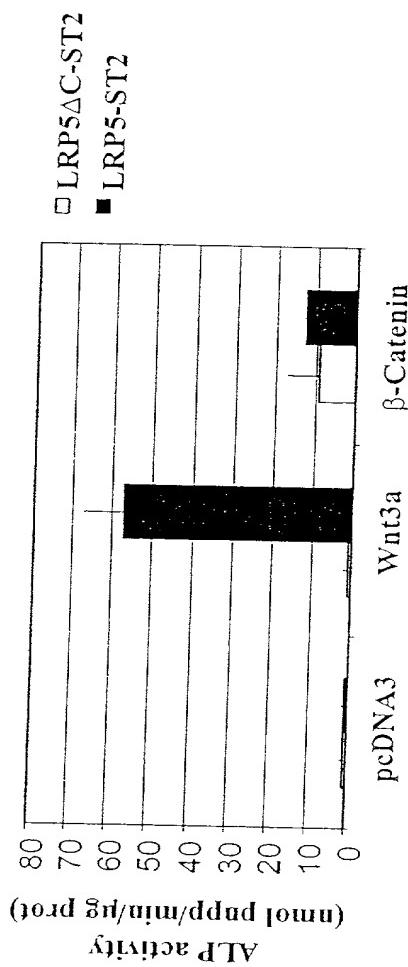


Figure 12



Matthew L. WARMAN et al.  
"REGULATOR GENE AND SYSTEM  
USEFUL FOR THE DIAGNOSIS AND  
THERAPY OF OSTEOPOROSIS  
Serial No. 09/931,375

## Figure 13

RVRLASHLRKLRK

RLTRKRGGLKLA

CRAKRNNFKSA

LKWKS

KIRVKAGETQKKVIFCSREKVSHL

FIPLKPTVKMLERSNHVSRTVEVSSNHV

DKGMAPALRHLYKELMGPWN

DALKLAIDNALNSIT